



## THE STATUS OF THE TRANSITION OF STRATEGIC C4 SYSTEMS IN THE DEPARTMENT OF DEFENSE AND THE U.S. ARMY WAR COLLEGE

By Mr. Bill Waddell<sup>1</sup>

### EXECUTIVE SUMMARY

The Department of Defense (DOD) is in the middle of a transition with regard to the strategic command, control, communications and computer (C4) systems being used at the Joint operational and strategic levels of warfighting and planning. This transition affects the U.S. Army War College's (USAWC) areas of education, collaboration, and outreach as students prepare for future leadership roles. The current system of record, the Global Command and Control System (GCCS), has been in use since 1996, and is being phased into the emerging system, identified as the Joint Command and Control (JC2) system. This phasing includes the continuity of current strategic and operational level C4 capabilities, and will expand to include the tactical level C4 tools and capabilities currently residing in the Army Battle Command System (ABCS). This transition is scheduled to be smooth; JC2 will take the attributes and operating system of GCCS. JC2 will not include the current initiatives in the areas of force planning and collaboration, tools utilized to conduct these missions will continue to be outside of the purview of the established strategic C4 system.

This paper will discuss the projected transition in strategic C4, identifying the emerging tools and capabilities in JC2, and also discuss emerging capabilities in the areas of force planning and collaboration systems. It will focus on the impact of the use of these tools and capabilities at USAWC for education, research, and outreach.

### BACKGROUND

The first modern strategic C4 system was developed in the early 1970's, meeting a requirement for military strategic command and control (C2) in the area of national and theater oversight of WMD. This system, the World Wide Military Command and Control System (WWMCCS), was a tightly controlled, limited access system, which was expanded to include other aspects of military operations. It had significant C2 capabilities, but was constrained by the size of the computers needed, processing limitations, security restrictions, and the user unfriendliness of the operating system. For these reasons not all organizations requiring the information had access to the system. The Services (Army, Navy, and Air Force) developed their own systems to meet their C2 requirements (referred to as "stovepipe" systems) because WWMCCS was unable to meet the emerging requirements. Several of the theater commands developed their own systems to meet their theater operational and planning requirements. Unfortunately there was no commitment to create interoperability between these systems. The annual fiscal requirements to continue the operation of WWMCCS were exorbitant, and Jointness in the area of C4 was nonexistent. In addition, operations Desert Shield and Desert Storm demonstrated that WWMCCS was not able to meet operational C4 requirements due to its lack of ubiquitous connectivity and requirement to operate in the Top Secret security classification mode. In 1993 the Joint Staff J6 identified the future requirement of the development of a system that would meet service and joint command and control requirements for interoperability. This new system was named the Global Command and Control System or GCCS, and became the system of record in 1996, replacing WWMCCS. This fledgling client/server system of systems, containing multiple tools and levels of interoperability, was the initial attempt to provide a truly "joint" C4 capability. The baseline concept was good: choose the best of existing systems and convert them to a standard "common operational environment," and attempt to provide the theater commander with a set of capabilities to meet modern warfare needs in the areas of planning, force readiness, intelligence access, a common operational picture (COP), logistics planning and execution, collaboration, personnel planning, and other capabilities including a messaging system. The Defense Information Systems Agency (DISA) was and is the lead agency to oversee this development. GCCS has developed somewhat over the nine year period of operation, unfortunately it has not met its original goals of providing Theater and National-level commanders with a system that will meet all strategic level C2

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needs. There was no standardization between theaters, the services continued to use their systems or develop new ones, and individual activities adopted the use of proprietary systems that met their need, but did not maintain interoperability with other organizations. This became very apparent during Operation Iraqi Freedom, as the Marines and Army initially deployed with different and non-interoperable systems (Blue Force Tracker and FBCB2 were not interoperable at the time) at the tactical level, and the tracking was not resolved at the theater level.

Force projection planning systems emerged in the DOD C4 inventory in the late 80's and were incorporated into the GCCS tool suite. The tools were initially focused on the manipulation of the Time Phased Force Deployment Data or TPFDD, but evolved into a capability of analyzing the entire movement of forces by national and theater sea and air lift availability and capacity. In the late 1990's U.S. Transportation Command (USTRANSCOM) developed the Joint Flow and Analysis System for Transportation (JFAST) which allowed logistics planners the opportunity to fully develop plans for the deployment, movement, and sustainment of personnel and equipment for contingency operations. JFAST uses a file generated by GCCS systems, but is not officially considered a part of the GCCS suite.

Collaboration systems containing "full up" collaboration capabilities<sup>2</sup> were developed and became operational in the early 90's. A system known as the Theater Analysis and Replanning Graphic Execution Toolkit (TARGET) was one of the first. TARGET was not officially included in the GCCS tool suite, but it provided Theater commanders the initial capability of full collaboration. Although not universally accepted it provided the initial capability to meet strategic collaboration requirements. Follow-on systems were developed: first the Defense Collaboration Tool Suite (DCTS) took existing commercial capabilities (Microsoft NetMeeting) and added some additional functionality. USTRANSCOM initiated the proprietary development of InfoWorkSpace (IWS), which was built ground-up to meet their requirements. Unfortunately, none of these initial three systems were able to interoperate. The Chairman of the Joint Chiefs of Staff established a requirement for interoperability, selecting DCTS as the baseline in the year 2000. Meanwhile USTRANSCOM continued the development of IWS. Currently, IWS has emerged as the "system du jour" for theater and national commanders in enterprise collaboration, although it has a steep annual licensing cost. In recent years a new capability in collaboration has emerged, that being a "peer to peer" connectivity that does not require large server capabilities to operate. Some of these systems include commercial products and web based software, allowing the global audience access to collaboration networks.<sup>3</sup>

## CURRENT SYSTEMS

The Global Command and Control System continues to be the system of record in DOD, however it is in a transitional state. Since the initiation of its development in 1993 GCCS programming has been based on the UNIX operating system language. The latest scheduled upgrade to GCCS (version 4.0) includes the potential transfer of these programs to a web-based (Hyper Text Mark-Up Language (HTML) or one like it) programming scheme for browser access; however, that has not been fully determined. The decision concerning the fielding of GCCS 4.0 is scheduled to be made in July 05. The Air Force has a parallel system, the Theater Battle Management Core System (TBMCS) version 1.3, which uses the same software as GCCS 4.0 – TBMCS 1.3 has officially been fielded, GCCS 4.0 has not. Current systems residing in GCCS include: INTELINK and Intelligence browser and imagery display (I3), Global status of resources and training (GSORTS), JOPES Editing Tool (JET) for TPFDD development, COP, systems for personnel planning, engineering planning, medical planning, and an automated message handling system. Additional external (those not included in GCCS) capabilities for strategic planning and logistics include IWS or DCTS for collaboration and JFAST for logistics flow planning.

In order to meet the emerging Adaptive Planning requirements established by the Secretary of Defense, a tool known as Collaborative Force-Building Analysis Sustainment and Transportation (CFAST) is in the final stages of development to meet the massive requirements of planning and deploying forces. CFAST is a web-based tool using a portal known as "SharePoint" as its access system. CFAST will provide planners with the capability of database access for force development, will utilize JFAST for logistics flow planning, and will allow national and theater level planners the ability to consider all aspects of force deployment.

## FUTURE SYSTEMS

The follow on system to GCCS has been identified and is in the process of being developed. This new system, the Joint Command and Control (JC2) system will be a follow-on system to GCCS 4.0, will incorporate the theater level C2 requirements, but also fully incorporate the tactical and service systems requirements for the future. For the Army that means that ABCS and the Future Combat System (FCS) being developed will require JC2 functionality to meet emerging tactical interoperability. JC2 will be a web-enabled, enterprise system designed to provide C2 interoperability to all services and joint organizations. Figure 1, from a June 3, 2005 briefing by the Program Manager, Ground Combat C2 (PM-GCC2) to USAWC students outlines the Army's plan in meeting transitional guidelines and milestones. Of note, Joint Forces Command (JFCOM) is the established Joint JC2 proponent, but there is no Service proponency established to date. Further, there is no

<sup>2</sup> Full-up collaboration includes desktop video and audio teleconferencing, shared white boards, file sharing and text chat functionality.

<sup>3</sup> This situation, DISA supporting DCTS and USTRANSCOM along with JFCOM supporting IWS is indicative of the difficulty involving identification of a common standard system.

# Path Forward

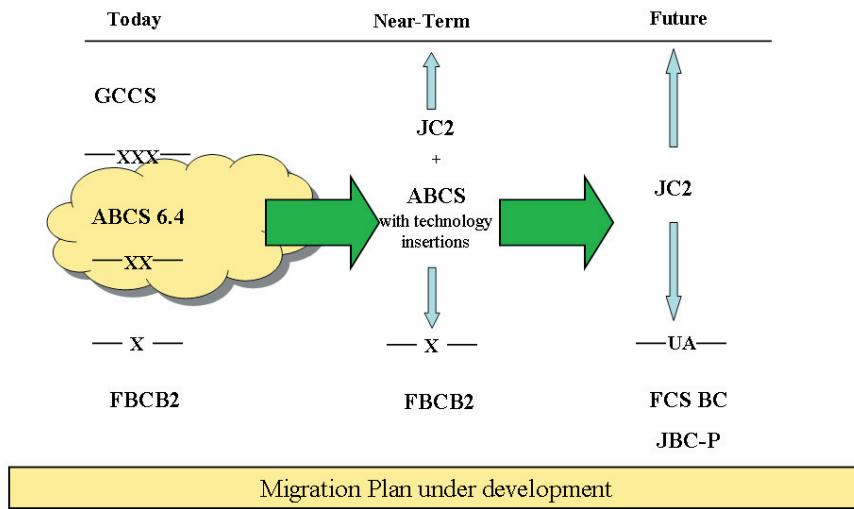


Figure 1

fully integrated the use of Microsoft's "Groove" system as a part of their daily business routine, integrating its usage on both the secret internet protocol network (SIPRNET) and unclassified networks. DISA has introduced and is pushing the use of "Webex," although the compatibility and interoperability of the two systems has yet to be demonstrated. There has been interest shown in the use of "portal" development and employment, where the operating system establishes a connection with a portal and collaborates with others using that common space. The previously mentioned CFAST tool uses one of the options, that being Microsoft SharePoint. Other considerations include "GES Portal" (DISA developed) which contains essentially the same capabilities as SharePoint. Concerning the enterprise types of collaboration, these tools provide a "many on many" capability where users log into a specified server where the data resides, and multiple users can share video/audio/whiteboard conferencing while collaborating documents and other text related materials. The two competing enterprise collaboration tools have not changed, they are the previously mentioned DCTS and IWS. It appears that IWS, despite its high annual cost, is winning out in popularity. Built as a ground up DOD collaboration system, it has become the consensus of planners that IWS conducts collaboration faster and easier than its competition, therefore the expenditure of the funds provides a more capable system.

In logistics and transportation areas all signs point to CFAST continuing to be the system identified to meet emerging requirements. Integration of CFAST for planners across all levels from national to theater should take place within the 2005 – 2006 timeframe.

## IMPACT

The U.S. Army War College, Center for Strategic Leadership (CSL) is an active participant in the transitional nature of strategic C4 systems. The CSL maintains a full GCCS, collaboration, and logistics and transportation planning capability for operational planning and academics, including all GCCS functionality, a full suite of collaboration tools (currently enterprise only), and access for research and development in the CFAST tool. These systems and capabilities have been integrated into the Army War College curriculum including the Strategic Crisis Exercise, allowing students to plan and coordinate with real world tools. As GCCS transitions to JC2 it too will be implemented in CSL so that staff and faculty will have access to national and theater data, allowing them to collaborate with combatant commands in support of coursework, research, and other academic activities. The Command and Control Group maintains and operates the systems, and teaches electives courses and blocks of instruction for systems use and strategic application. Subject matter experts in individual systems are nationally connected with continued development of these systems, to wit, USTRANSCOM provides USAWC with the new beta versions of JFAST for final testing, and U.S. Pacific Command (USPACOM) has provided USAWC with access to their in-development CFAST for USAWC educational and technical access. DCTS is used and maintained to provide students with a real time collaboration capability, a limited IWS capability is also available. Subject matter experts are in contact with DISA relative to the integration of P2P collaboration systems across the USAWC networks. A working rapport is maintained with the theater commands for purposes of collaboration. As DOD transitions to JC2 from GCCS the USAWC is involved in the educational aspects of this integration, as well as maintaining operational capabilities in the strategic C2 arena. Working relationships have been established with JFCOM POC's concerning the joint integration of JC2 capabilities. All of these areas point to a more robust level of integration available to students, staff, and faculty in the preparation of future strategic leaders.

established PM outside of the current PM-GCC2. The Combined Arms Center at Fort Leavenworth, is involved in establishing training requirements and writing the Army documentation. Figure 2 is the established calendar for the transition to JC2, though judging by current systems development, lack of proponency, and suspense date slippage, it does not appear that DOD will meet those established goals.

In the area of collaboration systems there have been numerous changes and possibilities for future integration of collaboration technology. There are two basic types of collaboration systems: peer to peer (P2P) and enterprise. In the P2P arena commercial applications seem to be growing in popularity, allowing individuals or several users to collaborate together using the initiating user's computer as host. JFCOM and Forces Command (FORSCOM) have

# Program Schedule Synchronization

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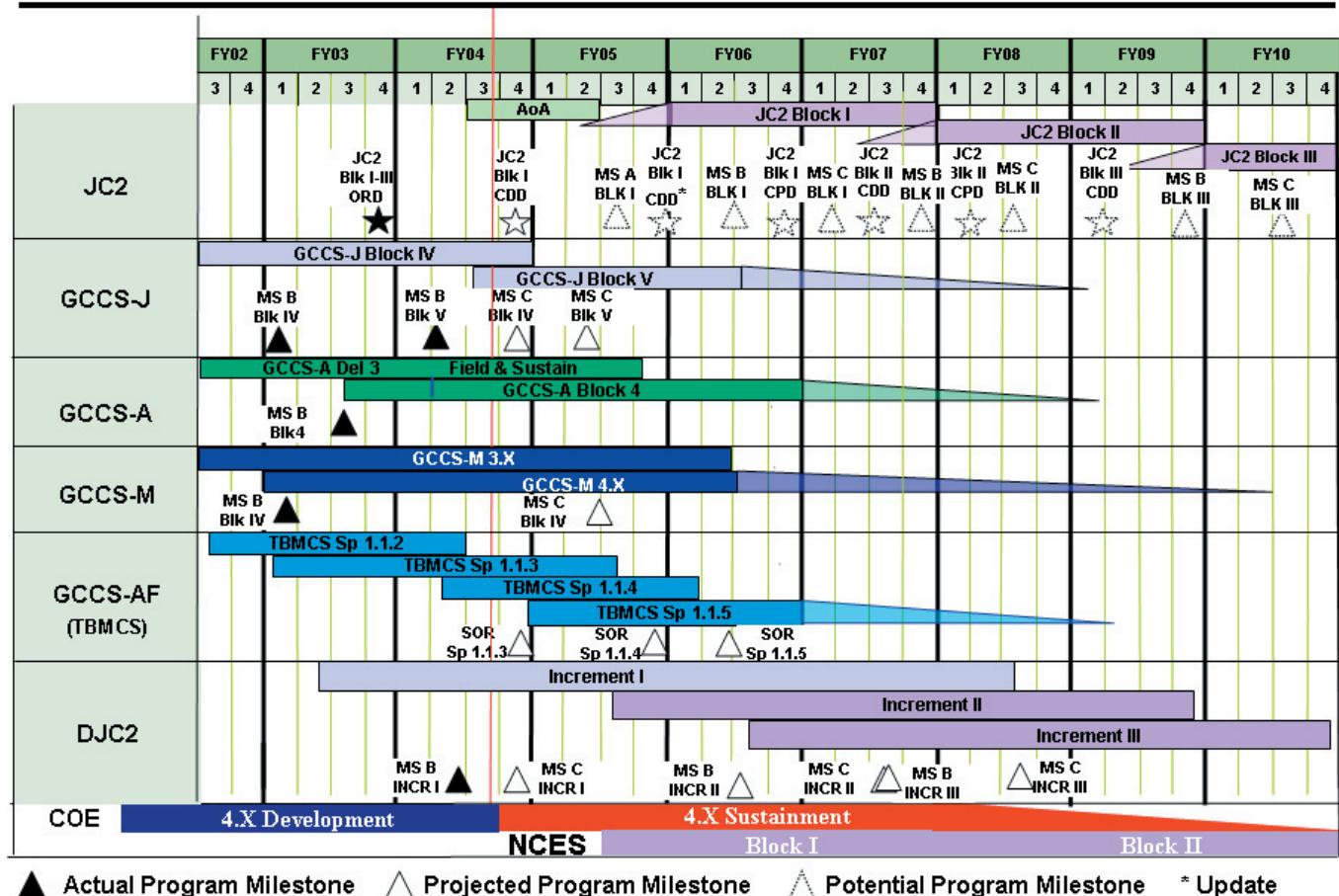


Figure 2

The continued integration of strategic information systems and command, control, communications, computers and Intelligence (C4I) technology is a crucial component of Information Operations and contingency planning education at USAWC. Current Network Centric Warfare operational concepts require secure, robust information environment. The USAWC is committed to providing its students with access to operational C4I systems, emphasizing the significance of information in future contingency operations.

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This and other issue papers may be found on the USAWC/CSL web site at <http://www.carlisle.army.mil/usacsl/JPapers.asp>.

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DO D AND USAWC  
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